UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

COPY

MEMORANDUM

SUBJECT: Request for a Removal Action and $2 Million Exemption at the Gulf Nuclear Site, Odessa, Ector County, Texas

FROM: for J. Chris Petersen
Gregory E. Fife, Senior On-Scene Coordinator
Site Response Section (6SF-R2)

THRU: Charles A. Gazda, Chief
Response and Prevention Branch (6SF-R)

TO: Myron O. Knudson, P.E., Director
Superfund Division (6SF)

I. PURPOSE

This memorandum requests approval for a Removal Action pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. §§9601 et seq., at the Gulf Nuclear Site ("Site") located in Odessa, Ector County, Texas. The memorandum also requests an exemption to the $2 million statutory limit for a Removal Action. The proposed action involves the removal and proper disposal of the radioactive sources and contaminated wastes, and disassembly and disposal of the contaminated buildings and foundations.

This action meets the criteria for initiating a removal action under the National Contingency Plan (NCP), 40 CFR §300.415. This action is expected to require less than twelve months.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS # TX0000605258
Category of removal: Time Critical
Site ID # 06KN

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6. Maps, Pictures and other graphic representations

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Attachment 2 Site Map
Attachment 3 Interim Status Report, U.S. EPA R&IE
Attachment 4 U.S. EPA Fact Sheet on Ionizing Radiation, No. 1 (EPA 402-F-98-009)
Attachment 5 U.S. EPA A Fact Sheet on the Health Effects from Ionizing Radiation, No. 2 (EPA 402-F-98-010)

B. Other Actions to Date

1. Previous actions

Other than the investigation, there have been no other Federal actions taken at the Site. The investigation of May, 2000 identified almost all of the isotopes and the activity level of the various containers and contaminated equipment. The investigation was conducted by the EPA's Office of Radiation and Indoor Air from Las Vegas, NV, the EPA START contractor, and the BRC. Uncontaminated material was segregated and disposed of properly. The inventory of the material remaining on-site is listed in the Interim Status Report from the EPA Radiation and Indoor Environmental National Laboratory, Attachment 3.

The investigation also included determining the extent of contamination of the soil on the Site. A subsurface investigation was conducted following allegations and suspicion of buried material. The soil contamination is very limited and does not appear to warrant a cleanup. The subsurface investigation resulted in a highly confident determination that there were no buried items on the site.

2. Current actions

The property is being monitored by an alarm system that will sound and notify the BRC in case of a break-in. The BRC also monitors the radiation levels at the perimeters of the site by placement of film devices to record the radiation. The BRC makes periodic visits to the site to conduct maintenance of the facility.

C. State and Local Authorities' Roles

1. State and local actions to date

Since 1992, the BRC has maintained the security at the Site by a monitored alarm system. BRC identified all the sources that had numbers associated with them and worked with the responsible parties to properly dispose of the source. They also used the information found in files to identify other responsible parties to dispose of other sources, contaminated material and equipment. Several members of the BRC worked along side EPA during the investigation.

A. Site Description

1. Removal site evaluation

The Gulf Nuclear Site ("Site") is located in Ector County, Texas immediately north of the Odessa City limits. On the Site are several radioactive sources and radioactive contaminated wastes, materials, and structures. The radiation level in the buildings is defined as a High Radiation Area and therefore time and shielding precautions must be observed. Machining of the sources, spills and other releases have contaminated the building and equipment. Several radioactive isotopes have been identified throughout the facility.

The meters and monitors have detected elevated radiation beyond the perimeter of the Site. This is from the "shine" from the gamma radioactive sources within the building. The level of radiation at the perimeter is high enough to be of concern by the Texas Department of Health (TDH).

Gulf Nuclear prepared radioactive sources for use in the oil patch and for medical services. The sources were bundled inside a downhole tool that would "light up" the formations or grout in a well in order to evaluate the formation or determine the effectiveness of the grout job. These sources are required to be registered and have a unique number, however, the sources that remain at the Site have no number associated with them. These sources are stored in "pigs" or shielding devices usually made of thick walls of lead.

Gulf Nuclear also prepared tracers. In the oil patch, tracers are typically radioactive sand that is pumped along with proppant and settle in place within the formation during a fracturing operation. Medical tracers are short half-life isotopes made to be injected into a body. Radioactive Iodine-131 was also prepared at the Site for thyroid treatments.

Gulf Nuclear also used its license to broker the disposal of wastes from other companies dealing with radioactive material. Much of the waste found on-site is believed to be brokered waste.

Some of the equipment and materials are from the associated Gulf Nuclear facility formerly in Webster, Texas. Enforcement actions taken by the State resulted in the closure of the Webster facility in the early 1990's.

The investigation has found radioactive contamination on the building walls and floors. Some of the radioactive material may be removed from the structure but it is also shown that the contamination is within the structure's material of construction. The level of radiation prohibited further estimation of what could be cleaned.

The population within ½ mile of the site is approximately 400; the population within 1 mile of the site is approximately 400; the population within 4 miles of the site is approximately 18,600. The site is approximately two-thirds of an acre in size.

2. Physical location

The Site is located at 2717 W. 81st, in Odessa. The area is unincorporated and unzoned, in a mixed residential and light industrial neighborhood. The Site is bordered by machine shops to the south and east, and residences and abandoned plastic coating facility to the north. The abandoned Leigh Metals facility that is part of the National Priority Listing known as Sprague Road Plume is immediately adjacent to the west. (See Attachment 2 - Site Map)

3. Site characteristics

The Site has one building made up of two different structures. The main part of the building is metal framed and housed the Gulf Nuclear offices, tracer lab, instrumentation lab, machining area and compactor. It is approximately 30 feet by 60 feet. There is an attached structure referred to as the source room and is only accessible via an exterior door. It is constructed of two rows of solid concrete block, to provide shielding from the radiation inside. It is approximately 20 feet by 26 feet. The slab foundation extends to form a pad of about 20 feet by 20 feet.

Two septic tanks serviced the facility. Samples indicate the sediment is contaminated with Cesium-137.

A chain link fence surrounds the property. An alarm system was installed and is being monitored by the State of Texas Department of Health - Bureau of Radiation Control (BRC). Signs are posted on the building and along the fence.

4. Releases or threatened release into the environment of a hazardous substance, pollutant or contaminant

Investigations conducted by the EPA in cooperation with the BRC found a variety of radionuclides including Cesium-137, Americium-241, Cobalt-60 and Radium-226. A detailed inventory of the material found in the building is included in the Attachment 3.

Cesium-137, Americium-241, Cobalt-60, Radium-226, and the other radionuclides are designated hazardous substances as defined in Section 101(14) of CERCLA, 42 U.S.C.§9601(14), and 40 CFR §302.4.

5. NPL status

The Site is not on the NPL. It does sit on top of the NPL site known as the Sprague Road Ground Water Plume. The source of the contamination is distinctively different than the source of the Sprague Road site, therefore it would be improper to include Gulf Nuclear in the NPL listing. Based on the ranking on the Sprague Road site and the information at the Site, it was indicated that the listing of Gulf Nuclear was improbable. However, should conditions change or more information becomes available for possible inclusion on the NPL, this removal action is consistent with any foreseeable remedial action.

6. Maps, Pictures and other graphic representations

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2. Potential for continued State/local response

The BRC has indicated its continued interest and its commitment to participate in the proposed removal action. It is expected to assist in the identification of radioactive contamination and the isotope and confirmation of decontamination. The BRCs assistance will facilitate the disposal and transportation procedures.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

The current conditions at the site meet the following factors which indicate that the site is a threat to the public health, welfare and the environment and a removal action is appropriate under §300.415(b)(2) of the National Contingency Plan. Any or all of these factors may be present at a site yet any one of these factors may determine the appropriateness of a removal action.

1. Exposure to Human Populations, Animals or the Food Chain, NCP Section 300.415 (b)(2)(I)

People can be exposed to the radiation from the perimeters of the Site. The perimeter monitoring instruments have detected radiation levels that require limited exposure to people in that area. Within the facility, a member of the general public would exceed the hourly allowable dose of radiation within a few minutes. The allowable dose for individual members of the public is found in 10 CFR § 20.1301, and allows no more than 0.1 Rem per year and no more than 2 mRem in any one hour. During the investigation, the monitors detected radiation in the ambient air within the building of over 30 mR/hour. A member of the general public would exceed the allowable hourly dose in approximately 4 minutes inside the building.

In addition to the gamma radiation found, alpha and beta sources and contamination were also found in the building. The particulates were found as surface contaminants on walls, drums, equipment, and tools. People coming into contact with those contaminated surfaces could have picked up the radioactive particles or ingested the contaminated dust particles.

2. Hazardous Substances or Pollutants or Contaminants in Drums, Barrels, Tanks, or Other Bulk Storage Containers, That May Pose a Threat of Release; NCP Section 300.415 (b)(2)(iii)

Radioactive contaminated waste is stored in drums, bags, and boxes. The waste is a combination of suits and gloves, laboratory supplies, and miscellaneous material. It is contaminated with alpha, beta, and gamma radiation.

Forty-three 5-gallon buckets of lead shot are contaminated with Cesium-137. The buckets were left outside the building. Had one of the buckets tipped over or corroded through, the contaminated lead shot could have easily migrated with rain run-off and contaminated a large area in the drainage pathway. The lead shot also presents an attractive nuisance. The lead shot is the type and size that is used in bird hunting shotgun shells, and a single bucket of the shot would have supplied reloads for many years. Had someone used the shot for that purpose, the contamination would have been spread further and would have entered the food chain.

3. Weather Conditions That May Cause Hazardous Substances or Pollutants or Contaminants to Migrate or be Released. NCP Section 300.415 (b)(2)(v)

The area is highly subject to tornados and high straight line winds. Since the building itself is contaminated, any structural damage would cause the radioactive contaminants to be released. The building does provide protection for the containers and other contaminated items. If the building is significantly damaged, the contaminants could easily migrate off-site.

4. Threat of fire or explosion, NCP Section 300.415 (b)(2)(vii)

The volume of volatile chemicals is minimal and does not present a high risk of fire or explosion resulting from those chemicals. However, the fire department is on record as saying that should a fire occur, it will take no action to fight the fire or enter the building. A fire could carry radiation in the plume which would be dispersed throughout the city.

5. Availability of Other Mechanisms, NCP Section 300.415 (b)(2)(vii)

The BRC is expected to participate in the removal action, and its involvement will be instrumental in facilitating the proper disposal of the radioactive. The BRC has indicated that it has exhausted its capability to dispose of the remaining material. The BRC does not have the mechanisms to conduct the required removal action.

No activity is expected from the PRPs. The bankruptcy trustee has completed his involvement in the Site as representatives of the owners. All sources and wastes that could be linked by the BRC to a PRP have been disposed of off-site.

B. Threats to the Environment

The threat to the environment is minimal at this Site unless it is allowed to continue to deteriorate. Run-off water enters the Monahans Draw but it is several miles away from a body of water.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants or contaminants from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

1. Immediate Risk to Public Health or Welfare or the Environment

The amount of radiation recorded at the perimeter of the Site poses an immediate risk to members of the public who may work or live in close proximity. The exposure standards require limited exposure to the radiation levels detected at the perimeter. Continued exposure to the radiation has been linked to respiratory effects, anemia, other adverse health effects. The radionuclides are considered carcinogens, and cancer is the major effect of concern. The permissible exposure level for members of the public entering the building would be exceeded in as little as four minutes.

Gamma (γ), Beta (β), and Alpha (α) radiation have been found in sources and in the form of contamination in the building. Each of these forms of radiation poses a different threat to human health by the characteristics of each. Gamma radiation is wave-like and can penetrate skin or other such barriers. Beta and Alpha are particulate, and barriers are more effective but the particles can enter a body by ingestion or inhalation. The particles could then have an effect on the cells of the body, causing cancer or mutations. See Attachments 4 & 5 for Health Effects of ionizing radiation.

2. Continued Response Actions are Immediately Required to Prevent, Limit, or Mitigate an Emergency

The proposed response action will remove the immediate threat from the radioactive sources and contamination. The dose rate from the radiation in the buildings is high and requires limits on the exposure to humans. However, should something disrupt the integrity of the building or one or more of the several containers, the migration of the radioactive material could be widespread. The contents of one of the 5-gallon buckets of Cesium-137 contaminated lead shot could contaminate acres of land above the EPA established cleanup standard. There are forty-three rusting 5-gallon buckets of contaminated lead shot.

A single 3 Curie (Ci) Americium-241 source is stored in the building. Direct exposure or even proximity exposure to the unshielded source would have an effect on humans. Cell damage could occur immediately and the potential for long term affects is great. For perspective, the cleanup level established by EPA is 15 pico-Curies (ρCi) or 15×10^{-12} Ci, or 0.000000000015 Ci.

Unauthorized salvaging has taken place at the adjacent and nearby sites. Even with

warning signs posted, media coverage, and visible and malodorous threats, salvagers have removed metal from plating shop buildings, electrical cables from active power lines, and other metal equipment. The lead shot and the lead pigs have high potential for salvage value. Improper disposal of the removed sources could have catastrophic results and demand extraordinary responses.

3. Assistance Will Not Otherwise be Provided on a Timely Basis

The State has exhausted its response capabilities. Through the BRC many sources and contaminated material were properly disposed of at off-site facilities. However, no other PRPs can easily be identified to dispose of the remainder of the material. The Gulf Nuclear, Inc., bankruptcy has been completed, and it is no longer an entity that could respond. There are no other state or local agencies capable of conducting the response on a timely basis.

However, the State of Texas Natural Resource Conservation Commission (TNRCC) has committed to contribute ten percent of the cleanup cost to expedite the response. The BRC has committed to assist with the EPA-lead response by providing personnel and equipment on-site.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

The radioactive sources and wastes will be packaged and transported off-site for disposal at a proper facility that is in compliance with the EPA Off-site Rule. The building and foundation will be disassembled and disposed of off-site at a proper facility. The material will be screened and segregated to minimize the volume of radioactive material. If any of the sources are viable for reuse, the BRC may assist with the proper transfer of licensing for future use. The foundation will be backfilled to appropriate grade.

The Ector County Judge is aware of the proposed removal action and is anticipating the potential reuse of the property. The reuse or revitalization of the property will be done taking into consideration the neighboring Sprague Road Plume site.

2. Contribution to remedial performance

No remedial action is expected to take place at this site. However, should conditions change or more information is found that indicates a remedial action is appropriate, the proposed action is consistent with any potential remedial action.

3. Description of alternative technologies

There are no alternative technologies that could feasibly be applied.

4. Applicable or relevant and appropriate requirements

This removal action will be conducted to eliminate the actual or potential release of a hazardous substance, pollutant, or contaminant to the environment, pursuant to CERCLA, 42 U.S.C. § 9601 et seq., and in a manner consistent with the National Contingency Plan, 40 CFR. Part 300, as required at 33 U.S.C. § 1321(c)(2) and 42 U.S.C. § 9605. Pursuant to 40 CFR Part 300.415(I), fund-financed removal actions under CERCLA § 104 and removal actions pursuant to CERCLA § 106 shall, to the extent practicable considering the exigencies of the situation, attain the applicable or relevant and appropriate requirements under Federal environmental law.

Due to the fact that consolidation and off-site disposal are the principal elements of this removal action, RCRA waste analysis requirements found at 40 CFR §§ 261.20 and 261.30, RCRA manifesting requirements found at 40 CFR § 262.20, and RCRA packaging and labeling requirements found at 40 CFR § 262.30 are deemed to be appropriate requirements for this removal action. Applicable RCRA requirements for landfill closure, 40 CFR § 264.111, Subpart G, may apply, which specify a cap with a permeability less than or equal to the permeability of any bottom liner or natural sub-soils present at the plant site. In addition, applicable specific closure requirements which are provided for surface impoundments, 40 CFR § 264.228, Subpart K, and applicable requirements for landfills, 40 CFR § 264.310, Subpart N may also apply. Post-closure and monitoring requirements may be applicable, 40 CFR § 264.117(a)(1), as well as RCRA requirements for location of a Transportation, Storage or Disposal facility in a 100-year flood plain, 40 CFR § 264.18 and 40 CFR 6, Appendix A. The selected removal action does not trigger placement under the RCRA Land Disposal Restrictions, since all waste will be moved only within the area of contamination or RCRA unit, 55 Fed. Reg. 8760 (March 8, 1990). Ambient air quality standards at 40 CFR 50 will be used, as applicable, to protect the quality of air during the implementation of the action.

5. Project schedule

The duration of activities is expected to be three to four months, depending upon weather conditions and scheduling, and the availability of disposal contractors and others.

B. Estimated Costs

The estimated costs are based on the extensive cost analysis and estimate in the U.S. EPA R&IE Interim Status Report, Attachment 3.

Extramural Costs

Cleanup Contractor	$2,500,000
START	$70,000
Subtotal, Extramural Costs	$2,570,000

Extramural Costs Contingency	$370,000
TOTAL, EXTRAMURAL COSTS	$2,940,000

Intramural Costs

EPA Direct Costs	$20,000
EPA Indirect Costs	$40,000
TOTAL, INTRAMURAL COSTS	$60,000
TOTAL, REMOVAL PROJECT CEILING	**$3,000,000**

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If this action is not taken at the Site, the potential for human exposure to contaminants at the Site will remain unabated. The drums, boxes, and bags will continue to deteriorate and the radioactive material will be released. The building is subject to vandalism, and people coming into contact with the contamination will be exposed to dangerous levels of radiation. Vandalism or damage from storms could result in the release and migration of the radiation.

VIII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this site.

IX. ENFORCEMENT

See Attachment 1.

X. RECOMMENDATION

This decision document represents the selected removal action for the Gulf Nuclear Site, in Odessa, Ector County, Texas developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the criteria as defined by 40 CFR Section 300.415(b)(2) of the NCP for a removal, and I recommend your approval of the proposed removal action and your approval of the $2 million dollar exemption. The total project ceiling, if approved, will be $3,000,000.

APPROVED Myron O. Knudson DATE 9-28-00